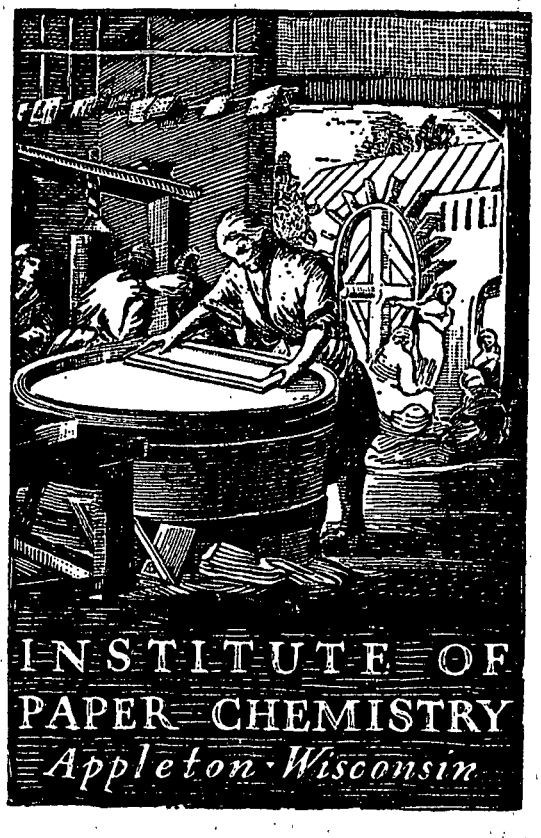


# CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Project 1108-17

Report 100

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

April 1, 1963

CODE LETTERS FOR PROGRESS REPORT 100

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM
Project 1108-17

| Company - Mill | Machine No. | Code Letter |
|---|---|---|
| The Chesapeake Corporation--West Point | 1 | -- |
| Container Corporation of America--Circleville | 1 | N |
| Continental Can Company, Inc.--Hopewell | 1 | E |
| --Hodge | 1 | S |
| Crown Zellerbach Corporation--Baltimore | 1 | J |
| --Baltimore | 2 | C |
| --Bogalusa | 4 | P |
| --Lebanon | 1 | -- |
| --Lebanon | 2 | V |
| International Paper Company--Bastrop | 1 | D |
| --Bastrop | 2 | Q |
| --Georgetown | 1 | T |
| The Mead Corporation--Harriman | 1 | O |
| --Knoxville | 1 | -- |
| --Lynchburg | 2 | U |
| --Sylva | 1 | -- |
| Olin Mathieson Chemical Corporation--Monroe | 1 | -- |
| --Monroe | 2 | -- |
| Owens-Illinois Glass Company--Big Island | 3 | I |
| --Tomahawk | 1 | A |
| --Tomahawk | 2 | L |
| --Tomahawk | 3 | W |
| Packaging Corporation of America--Filer City | 1 | H |
| --Filer City | 2 | R |
| St. Joe Paper Company--Port St. Joe | 1 | -- |
| St. Regis Container Corporation, Mill Division--Coshocton | 1 | B |
| Union Bag-Camp Paper Corporation--Savannah | 2 | G |
| West Virginia Pulp and Paper Company--Covington | 6 | K |
| --Covington | 7 | -- |
| --Charleston | -- | -- |
| Weyerhaeuser Company | | |
| North Carolina Division--Plymouth | 3 | M |

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

# CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

Project 1108-17

Report 100

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

April 1, 1963

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

# CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

## INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous evaluation of corrugating medium are prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis. This system was initiated on August 1, 1961. This tenth report under the bimonthly system presents results obtained during the months of February and March, 1963.

During this tenth bimonthly period, 152 rolls of corrugating medium representing the production of twenty-two machines were evaluated. A tabulation of the number of rolls and type of medium submitted from each machine is given in Table I. In connection with the data given in Table I, it should be mentioned that, effective September 1, 1961, at the request of the Technical Committee, the limit on the number of rolls submitted for evaluation from each machine during a given month was reduced from six to four.

Each sample of corrugating medium was evaluated for basis weight, caliper, Concora flat crush (conditioned after fluting), H. and D. flat crush on single-faced board, and runnability. Runnability was measured by corrugating each roll under standardized conditions on the Institute's corrugator into A-flute board at 600 feet per minute with minimum tension. If unsatisfactory runnability occurred at this speed, the corrugator was slowed down in increments of 25 f.p.m. until satisfactory runnability was obtained—i.e., no ruptured flutes. If the medium fabricated satisfactorily at 600 f.p.m. with minimum tension, further runs were made at higher tensions to determine when cracking occurred. The higher tensions used were 0.5 lb. per inch, 1.0 lb. per inch, and 1.5 lb. per inch.

TABLE I

NUMBER OF ROLLS AND TYPE OF CORRUGATING MEDIUM SUBMITTED FOR EVALUATION FROM EACH MACHINE

February and March, 1963

| Machine Code | Number of Rolls | Type |
|---|---|---|
| A | 8 | Semichemical |
| B | 4 | Bogus |
| C | 8 | Bogus |
| D | 2 | Semichemical |
| E | 7 | Semichemical |
| F | 8 | Semichemical |
| G | 9 | Semichemical |
| H | 9 | Semichemical |
| I | 12 | Semichemical |
| J | 8 | Bogus |
| K | 1 | Semichemical |
| L | 8 | Semichemical |
| M | 7 | Semichemical |
| N | 4 | Semichemical |
| O | 10 | Semichemical |
| P | 6 | Semichemical |
| Q | 5 | Semichemical |
| R | 9 | Semichemical |
| S | 2 | Semichemical |
| T | 9 | Semichemical |
| U | 8 | Semichemical |
| V | 8 | Semichemical |
| Total | 152 | |

Flat crush was determined on the single-faced board obtained at a speed of 600 f.p.m. with minimum tension. The flat crush results, in addition to supplying information about quality, will provide data which may be useful in studying the relationship between Concora flat crush and combined board flat crush for each participant's medium.

For each participating machine, the current machine averages associated with the current period are shown for each test in Table II and presented graphically in Fig. 1 to 4. The current machine average is the average of the test results obtained on all rolls of corrugating medium evaluated from a given machine during the current period. In addition to the test data obtained for the various machines, Table II also presents the current F.K.I. averages, cumulative F.K.I. averages, and the F.K.I. indexes. The current F.K.I. average for each test is the average of the test results for all machines participating in the study during a given period. The cumulative F.K.I. average for each test is determined by averaging the results for the previous twelve-month period excluding the result for the current period. The F.K.I. index for each test is obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. An index greater than 100% indicates that current quality is higher than the average result for the previous twelve periods; an index below 100% indicates that current quality is lower than the average result for the previous twelve periods.

The test results obtained on the sample lots submitted from the production of individual machines during the current period are shown in Tables III through XXIV for Machines A through V, respectively. The maximum, minimum, and

TABLE II

SUMMARY OF CURRENT MACHINE AVERAGES

February and March, 1963

| Mill Code | Basis Weight, lb. | Caliper, points | Concora Flat Crush, p.s.i. | Single-Face Flat Crush, p.s.i. |
|---|---|---|---|---|
| A | 26.9 | 10.1 | 37.0 | 33.6 |
| B | 28.4 | 10.5 | 38.4 | 34.9 |
| C | 27.5 | 9.8 | 37.2 | 32.3 |
| D | 26.3 | 10.8 | 40.0 | 34.4 |
| E | 27.9 | 10.9 | 38.6 | 33.9 |
| F | 27.3 | 10.4 | 36.3 | 32.2 |
| G | 26.9 | 9.0 | 38.9 | 34.1 |
| H | 26.4 | 10.5 | 32.0 | 29.0 |
| I | 26.7 | 10.3 | 36.9 | 32.8 |
| J | 26.7 | 9.7 | 35.1 | 30.3 |
| K | 27.1 | 10.1 | 36.5 | 31.9 |
| L | 26.7 | 10.1 | 39.2 | 34.5 |
| M | 26.5 | 10.3 | 36.5 | 32.7 |
| N | 27.6 | 10.9 | 36.0 | 30.8 |
| O | 28.2 | 11.1 | 33.1 | 28.9 |
| P | 27.8 | 10.1 | 33.7 | 31.2 |
| Q | 26.5 | 10.4 | 39.2 | 35.1 |
| R | 26.3 | 9.8 | 35.6 | 30.6 |
| S | 27.3 | 10.4 | 36.2 | 31.0 |
| T | 27.1 | 10.5 | 37.6 | 32.8 |
| U | 27.4 | 10.2 | 35.6 | 30.1 |
| V | 27.5 | 10.0 | 33.3 | 29.5 |
| Current F.K.I. average | 27.1 | 10.3 | 36.5 | 32.1 |
| Cumulative F.K.I. average | 27.1 | 10.3 | 36.7 | 33.2 |
| F.K.I. index, % | 100.0 | 100.0 | 99.6 | 96.8 |

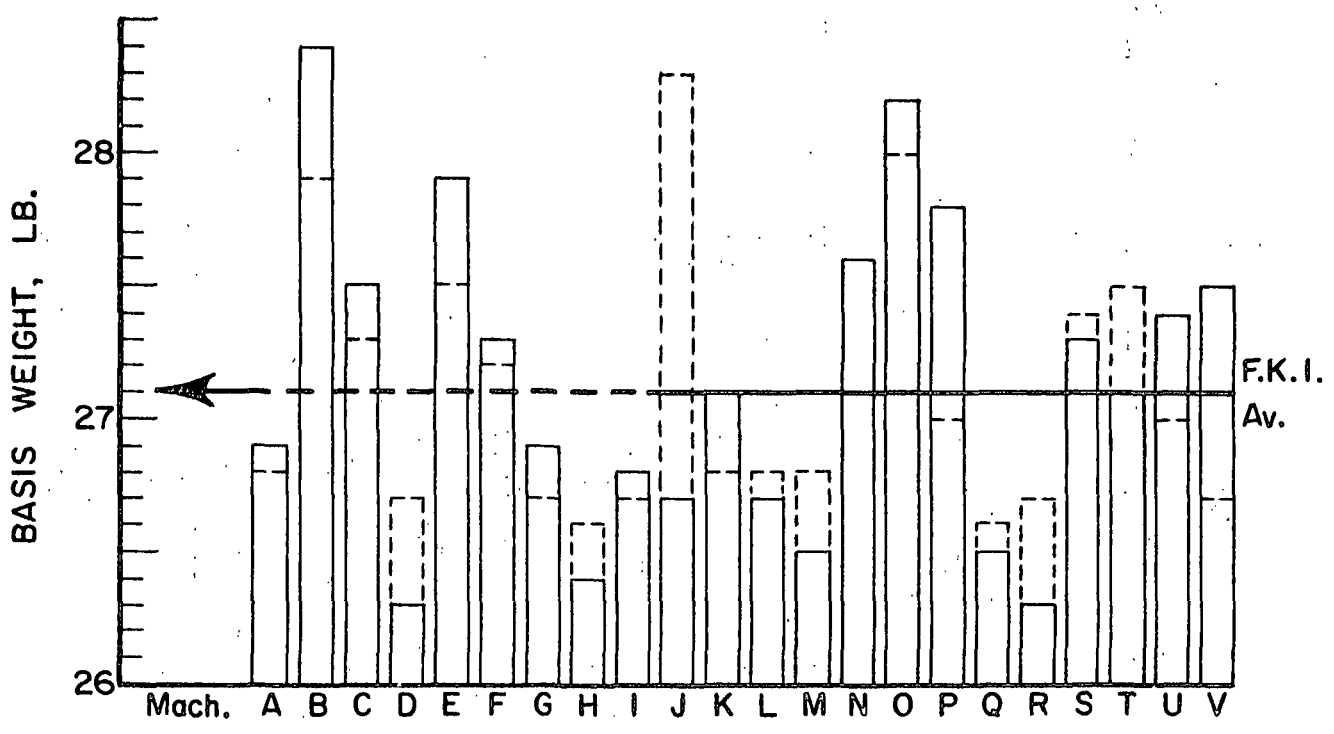


Figure 1. Comparison of Basis Weight Results

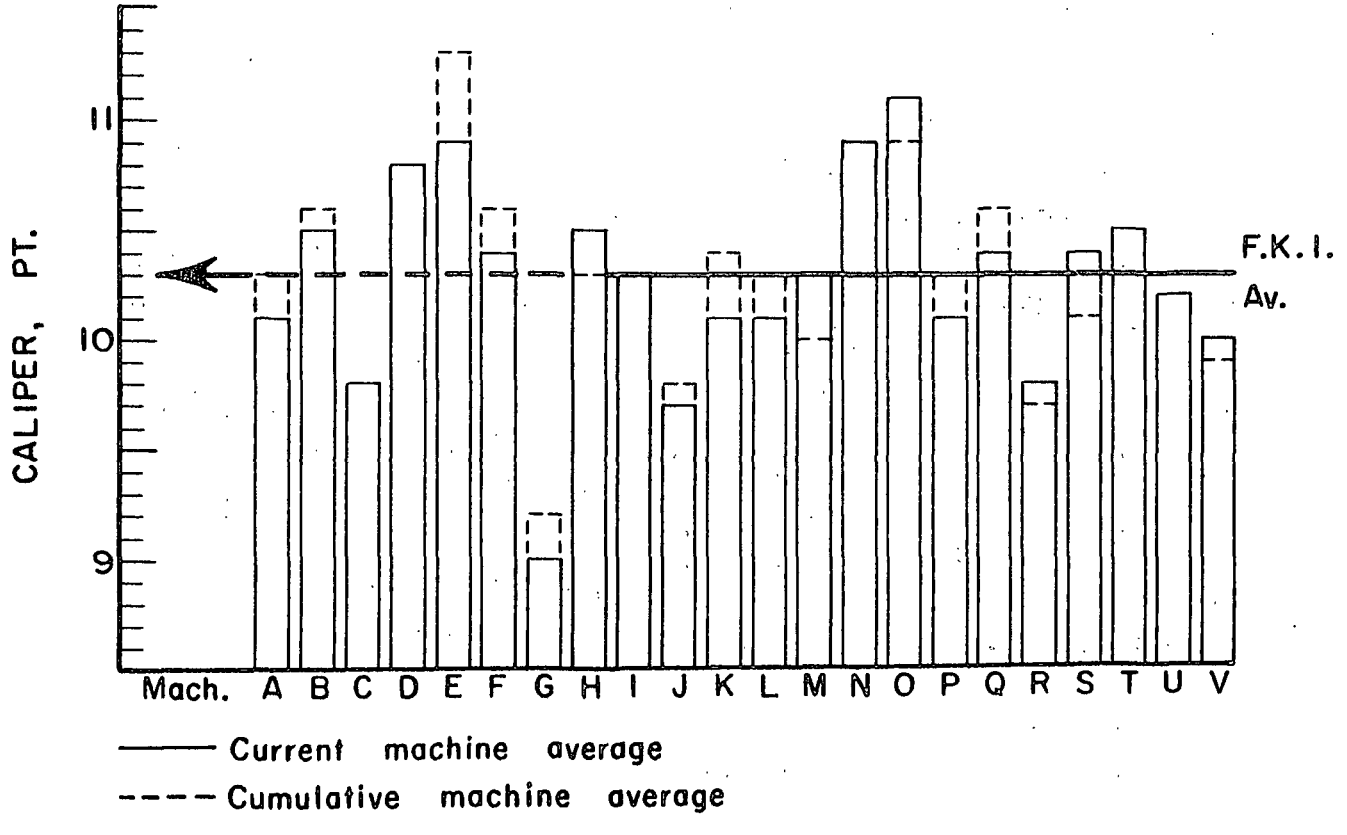


Figure 2. Comparison of Caliper Results

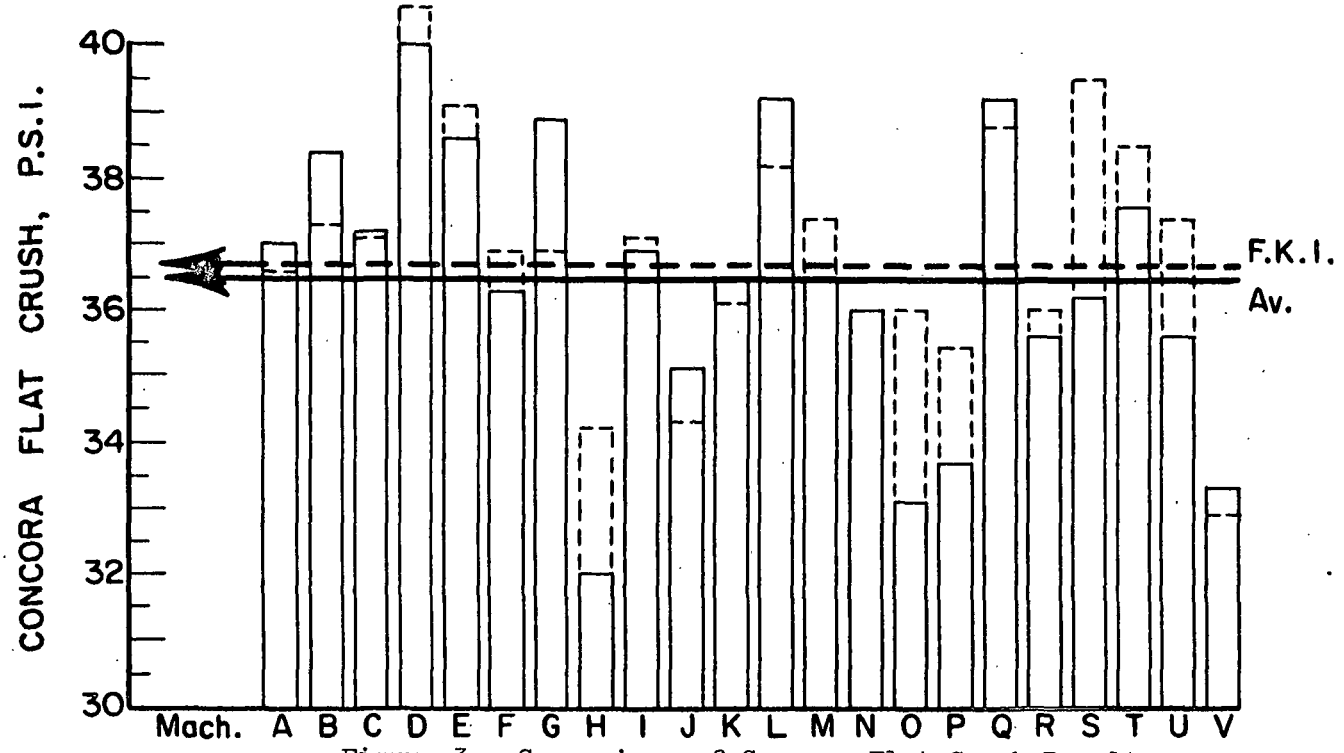


Figure 3. Comparison of Concora Flat Crush Results

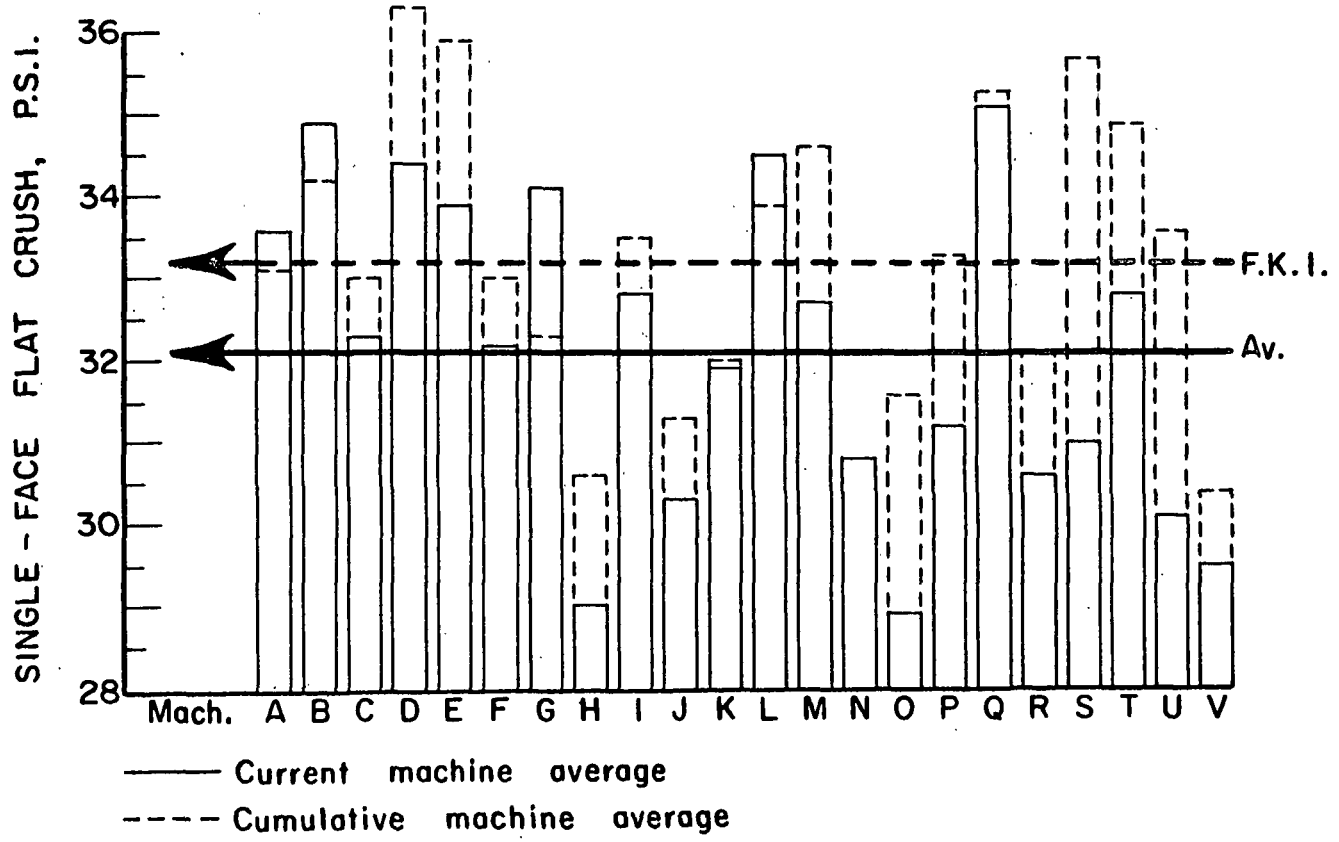


Figure 4. Comparison of Single-Face Flat Crush Results

TABLE III

SUMMARY OF TEST RESULTS FOR MACHINE A

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| A-1 | 2- 5-63 | 2-19-63 | -- | 27.1 | 10.0 | 9.6 | 9.9 | 38.4 | 35.4 | 36.7 | 36.0 | 33.0 | 34.5 | 1-1/2 |
| A-2 | 2- 7-63 | 2-19-63 | -- | 27.1 | 10.4 | 9.7 | 10.0 | 38.4 | 34.8 | 36.7 | 35.8 | 34.4 | 34.9 | 1-1/2 |
| A-3 | 2- 9-63 | 2-19-63 | -- | 26.0 | 10.1 | 9.6 | 9.9 | 37.8 | 36.0 | 36.8 | 35.0 | 32.8 | 33.7 | 1-1/2 |
| A-4 | 2-13-63 | 2-19-63 | -- | 27.5 | 10.6 | 10.0 | 10.3 | 40.2 | 34.8 | 36.7 | 34.8 | 32.6 | 33.8 | 1-1/2 |
| A-5 | 3- 6-63 | 3-21-63 | -- | 27.0 | 10.5 | 10.0 | 10.3 | 38.4 | 34.8 | 36.2 | 34.0 | 32.0 | 32.7 | 1-1/2 |
| A-6 | 3- 8-63 | 3-21-63 | -- | 27.0 | 10.2 | 9.9 | 10.0 | 39.0 | 36.0 | 37.6 | 36.0 | 33.8 | 34.8 | 1-1/2 |
| A-7 | 3-12-63 | 3-21-63 | -- | 26.6 | 10.3 | 10.0 | 10.1 | 38.4 | 35.4 | 36.6 | 33.0 | 30.0 | 31.4 | 1-1/2 |
| A-8 | 3-13-63 | 3-21-63 | -- | 26.9 | 10.2 | 9.9 | 10.0 | 40.2 | 36.0 | 38.3 | 34.6 | 31.8 | 33.1 | 1-1/2 |
| Current machine average | | | | 26.9 | | | 10.1 | | | 37.0 | | | 33.6 | |
| Cumulative machine average | | | | 26.8 | | | 10.3 | | | 36.6 | | | 33.1 | |
| Machine factor, % | | | | 100.5 | | | 97.5 | | | 101.1 | | | 101.4 | |
| Machine index, % | | | | 99.2 | | | 98.0 | | | 100.8 | | | 101.2 | |

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE B

February and March, 1963
(Type of Medium: Bogus)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-1 | 2-15-63 | 2-25-63 | 410 | 28.5 | 11.2 | 9.9 | 10.5 | 40.2 | 35.4 | 38.4 | 34.0 | 31.4 | 33.2 | 1-1/2 |
| B-2 | 2-19-63 | 2-25-63 | 411 | 28.5 | 11.5 | 11.0 | 11.1 | 43.2 | 37.8 | 40.2 | 36.0 | 34.0 | 34.7 | 1-1/2 |
| B-3 | 3-12-63 | 3-25-63 | 412 | 28.7 | 11.2 | 10.0 | 10.4 | 42.0 | 36.0 | 38.6 | 41.8 | 35.0 | 36.6 | 1-1/2 |
| B-4 | 3-15-63 | 3-25-63 | 413 | 28.0 | 10.8 | 10.0 | 10.2 | 39.0 | 33.6 | 36.4 | 37.8 | 33.4 | 35.1 | 1-1/2 |
| Current machine average | | | | 28.4 | | | 10.5 | | | 38.4 | | | 34.9 | |
| Cumulative machine average | | | | 27.9 | | | 10.6 | | | 37.3 | | | 34.2 | |
| Machine factor, % | | | | 101.9 | | | 99.0 | | | 102.9 | | | 102.2 | |
| Machine index, % | | | | 104.9 | | | 102.7 | | | 104.7 | | | 105.2 | |

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE C

February and March, 1963
(Type of Medium: Bogus)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points Max. | Caliper, points Min. | Caliper, points Av. | Concora Flat Crush, p.s.i. Max. | Concora Flat Crush, p.s.i. Min. | Concora Flat Crush, p.s.i. Av. | Single-Face Flat Crush, p.s.i. Max. | Single-Face Flat Crush, p.s.i. Min. | Single-Face Flat Crush, p.s.i. Av. | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-1 | 1-22-63 | 1-31-63 | 159 | 27.7 | 10.5 | 10.0 | 10.2 | 40.2 | 36.6 | 38.5 | 35.2 | 32.8 | 34.0 | 1-1/2 |
| C-2 | 1-22-63 | 1-31-63 | 160 | 27.5 | 10.3 | 8.0 | 9.7 | 39.0 | 34.2 | 37.0 | 35.2 | 31.6 | 33.0 | 1-1/2 |
| C-3 | 1-31-63 | 2-22-63 | 161 | 26.7 | 10.3 | 8.8 | 9.7 | 36.6 | 32.4 | 34.3 | 30.8 | 29.0 | 30.1 | 1-1/2 |
| C-4 | 1-31-63 | 2-22-63 | 162 | 26.1 | 10.2 | 9.1 | 9.8 | 39.0 | 36.0 | 37.6 | 33.6 | 30.0 | 31.9 | 1-1/2 |
| C-5 | 2-5-63 | 2-22-63 | 163 | 27.5 | 11.2 | 9.3 | 9.9 | 37.8 | 34.8 | 36.7 | 33.0 | 29.8 | 31.5 | 1-1/2 |
| C-6 | 2-5-63 | 2-22-63 | 164 | 26.7 | 10.5 | 8.7 | 9.7 | 39.0 | 34.2 | 36.6 | 32.4 | 31.6 | 32.0 | 1-1/2 |
| C-7 | 2-15-63 | 2-22-63 | 165 | 30.1 | 10.3 | 9.0 | 9.8 | 42.0 | 36.0 | 38.4 | 35.6 | 32.4 | 33.5 | 1 |
| C-8 | 2-15-63 | 2-22-63 | 166 | 27.5 | 10.3 | 9.3 | 9.9 | 39.6 | 36.0 | 38.3 | 33.0 | 31.8 | 32.5 | 1 |
| Current machine average | | | | 27.5 | | | 9.8 | | | 37.2 | | | 32.3 | |
| Cumulative machine average | | | | 27.3 | | | 9.8 | | | 37.1 | | | 33.0 | |
| Machine factor, % | | | | 100.6 | | | 100.0 | | | 100.2 | | | 97.9 | |
| Machine index, % | | | | 101.4 | | | 95.6 | | | 101.4 | | | 97.3 | |

TABLE VI

SUMMARY OF TEST RESULTS FOR MACHINE D

February and March, 1963
(Type of Medium: Semichemical)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-1 | 1-25-63 | 1-31-63 | 684 | 26.0 | 11.7 | 10.2 | 11.2 | 44.4 | 37.2 | 40.1 | 34.8 | 33.6 | 34.2 | 1/2 |
| D-2 | 3-12-63 | 3-18-63 | 685 | 26.5 | 11.0 | 10.1 | 10.5 | 43.2 | 38.4 | 40.0 | 35.8 | 32.4 | 34.6 | 1-1/2 |
| Current machine average | | | | 26.3 | | | 10.8 | | | 40.0 | | | 34.4 | |
| Cumulative machine average | | | | 26.7 | | | 10.8 | | | 40.6 | | | 36.3 | |
| Machine factor, % | | | | 98.3 | | | 100.0 | | | 98.6 | | | 94.8 | |
| Machine index, % | | | | 96.8 | | | 105.4 | | | 109.1 | | | 103.6 | |

TABLE VII

SUMMARY OF TEST RESULTS FOR MACHINE E

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| E-1 | 1-11-63 | 2- 6-63 | 392 | 27.6 | 11.0 | 10.0 | 10.6 | 45.6 | 38.4 | 41.5 | 37.8 | 34.8 | 36.3 | 1-1/2 |
| E-2 | 1-16-63 | 2- 5-63 | 393 | 28.3 | 11.0 | 10.4 | 10.8 | 42.0 | 37.8 | 40.2 | 35.6 | 33.6 | 34.9 | 1-1/2 |
| E-3 | 1-24-63 | 2- 6-63 | 394 | 28.9 | 11.4 | 11.0 | 11.1 | 41.4 | 38.4 | 40.3 | 38.0 | 34.2 | 35.7 | 1-1/2 |
| E-4 | 2- 4-63 | 2-21-63 | 395 | 27.2 | 11.2 | 10.6 | 11.0 | 40.2 | 34.2 | 36.8 | 32.6 | 30.6 | 31.6 | 1-1/2 |
| E-5 | 2-11-63 | 2-21-63 | 396 | 27.4 | 11.3 | 10.7 | 11.0 | 39.0 | 33.6 | 37.0 | 33.6 | 31.0 | 32.0 | 1 |
| E-6 | 2-19-63 | 3-11-63 | 397 | 27.8 | 11.5 | 11.0 | 11.1 | 40.2 | 34.8 | 37.9 | 34.2 | 31.0 | 32.6 | 1-1/2 |
| E-7 | 2-26-63 | 3-11-63 | 398 | 28.1 | 11.1 | 10.9 | 11.0 | 40.2 | 33.0 | 36.7 | 35.8 | 33.2 | 34.2 | 1 |
| Current machine average | | | | 27.9 | | | 10.9 | | | 38.6 | | | 33.9 | |
| Cumulative machine average | | | | 27.5 | | | 11.3 | | | 39.1 | | | 35.9 | |
| Machine factor, % | | | | 101.5 | | | 97.3 | | | 98.8 | | | 94.5 | |
| Machine index, % | | | | 102.9 | | | 106.6 | | | 105.4 | | | 102.1 | |

TABLE VIII

SUMMARY OF TEST RESULTS FOR MACHINE F

February and March, 1963
(Type of Medium: Semichemical)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F-1 | 2- 5-63 | 2-19-63 | -- | 26.6 | 10.7 | 10.2 | 10.4 | 40.2 | 34.2 | 36.5 | 33.6 | 31.4 | 32.6 | 1/2 |
| F-2 | 2- 6-63 | 2-19-63 | -- | 26.9 | 10.8 | 10.2 | 10.4 | 39.0 | 34.8 | 37.1 | 35.0 | 33.4 | 34.4 | 1/2 |
| F-3 | 2- 7-63 | 2-19-63 | -- | 27.4 | 10.8 | 10.3 | 10.6 | 36.6 | 36.0 | 36.4 | 33.8 | 32.8 | 33.3 | 1/2 |
| F-4 | 2- 8-63 | 2-19-63 | -- | 28.0 | 11.2 | 10.6 | 11.0 | 42.0 | 36.0 | 38.8 | 35.0 | 32.6 | 33.8 | 1 |
| F-5 | 3- 6-63 | 3-21-63 | -- | 26.6 | 10.2 | 10.0 | 10.1 | 37.8 | 34.2 | 35.8 | 31.6 | 30.0 | 30.7 | 1-1/2 |
| F-6 | 3- 8-63 | 3-21-63 | -- | 26.8 | 10.3 | 9.9 | 10.1 | 37.8 | 34.2 | 35.2 | 31.6 | 29.4 | 30.8 | 1-1/2 |
| F-7 | 3-11-63 | 3-21-63 | -- | 29.1 | 10.5 | 10.1 | 10.3 | 36.0 | 33.0 | 34.1 | 31.0 | 29.4 | 30.0 | 1-1/2 |
| F-8 | 3-13-63 | 3-21-63 | -- | 27.4 | 10.5 | 10.1 | 10.2 | 39.6 | 35.4 | 37.1 | 34.2 | 30.6 | 32.2 | 1-1/2 |
| Current machine average | | | | 27.3 | | | 10.4 | | | 36.3 | | | 32.2 | |
| Cumulative machine average | | | | 27.2 | | | 10.6 | | | 36.9 | | | 33.0 | |
| Machine factor, % | | | | 100.4 | | | 98.2 | | | 98.5 | | | 97.8 | |
| Machine index, % | | | | 100.8 | | | 101.0 | | | 99.1 | | | 97.1 | |

TABLE IX

SUMMARY OF TEST RESULTS FOR MACHINE G

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| G-1 | 2- 7-63 | 2-19-63 | 529 | 26.6 | 9.6 | 8.9 | 9.2 | 41.4 | 37.8 | 39.8 | 35.4 | 32.4 | 33.7 | Note[a] |
| G-2 | 2- 8-63 | 2-19-63 | 530 | 26.2 | 9.1 | 8.5 | 8.9 | 38.4 | 34.2 | 36.1 | 32.8 | 30.4 | 31.3 | 1-1/2 |
| G-3 | 2-19-63 | 2-25-63 | 531 | 26.7 | 9.0 | 8.7 | 8.9 | 41.4 | 35.4 | 38.3 | 35.0 | 33.0 | 34.2 | Note[a] |
| G-4 | 2-21-63 | 2-27-63 | 532 | 26.2 | 9.0 | 8.8 | 8.9 | 40.2 | 33.6 | 37.2 | 32.8 | 31.0 | 31.9 | 1-1/2 |
| G-5 | 2-22-63 | 3-12-63 | 533 | 27.1 | 9.5 | 8.8 | 9.0 | 40.2 | 36.6 | 38.8 | 33.8 | 31.6 | 33.0 | 1 |
| G-6 | 2-23-63 | 3-12-63 | 534 | 27.6 | 9.3 | 8.5 | 9.0 | 42.0 | 38.4 | 40.4 | 36.4 | 35.6 | 36.0 | 1-1/2 |
| G-7 | 3- 1-63 | 3-18-63 | 535 | 27.8 | 9.4 | 9.0 | 9.1 | 42.0 | 39.0 | 40.1 | 34.8 | 33.4 | 34.2 | 1-1/2 |
| G-8 | 3- 9-63 | 3-20-63 | 536 | 27.2 | 9.1 | 8.7 | 8.9 | 43.2 | 38.4 | 40.7 | 38.8 | 35.6 | 37.4 | 1-1/2 |
| G-9 | 3-11-63 | 3-25-63 | 537 | 26.8 | 9.4 | 9.0 | 9.1 | 43.2 | 34.2 | 39.1 | 38.2 | 33.0 | 34.8 | 1/2 |
| Current machine average | | | | 26.9 | | | 9.0 | | | 38.9 | | | 34.1 | |
| Cumulative machine average | | | | 26.7 | | | 9.2 | | | 36.9 | | | 32.3 | |
| Machine factor, % | | | | 100.9 | | | 97.6 | | | 105.7 | | | 105.5 | |
| Machine index, % | | | | 99.3 | | | 87.6 | | | 106.2 | | | 102.6 | |

[a]Maximum speed at which this roll could be corrugated with minimum tension was 575 f.p.m.

TABLE X

SUMMARY OF TEST RESULTS FOR MACHINE H

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| H-1 | 1-22-63 | 1-29-63 | 51 | 25.8 | 10.8 | 10.4 | 10.7 | 34.2 | 31.8 | 33.1 | 29.2 | 28.0 | 28.5 | 1-1/2 |
| H-2 | 1-27-63 | 1-31-63 | 52 | 26.0 | 10.3 | 9.7 | 10.0 | 35.4 | 31.2 | 33.7 | 30.4 | 28.6 | 29.1 | 1-1/2 |
| H-3 | 2- 3-63 | 2- 7-63 | 53 | 26.3 | 11.1 | 10.3 | 10.6 | 33.6 | 30.0 | 31.9 | 29.2 | 26.6 | 28.1 | 1-1/2 |
| H-4 | 2-12-63 | 2-15-63 | 54 | 26.0 | 10.6 | 9.4 | 9.9 | 33.6 | 28.2 | 30.2 | 29.6 | 26.8 | 27.9 | 1-1/2 |
| H-5 | 2-18-63 | 2-26-63 | 55 | 26.1 | 10.4 | 10.0 | 10.2 | 33.0 | 30.0 | 31.4 | 29.8 | 28.0 | 29.2 | 1-1/2 |
| H-6 | 2-27-63 | 3- 4-63 | 56 | 26.2 | 11.0 | 10.5 | 10.8 | 32.4 | 27.0 | 29.9 | 27.6 | 24.4 | 26.3 | 1-1/2 |
| H-7 | 3- 6-63 | 3-11-63 | 57 | 26.8 | 11.2 | 10.8 | 11.0 | 32.4 | 28.2 | 29.6 | 28.2 | 26.8 | 27.4 | 1-1/2 |
| H-8 | 3-12-63 | 3-18-63 | 58 | 27.3 | 11.0 | 10.0 | 10.6 | 34.2 | 28.8 | 32.0 | 30.6 | 28.8 | 29.6 | 1-1/2 |
| H-9 | 3-19-63 | 3-25-63 | 59 | 27.4 | 10.9 | 10.0 | 10.5 | 37.2 | 34.2 | 36.4 | 35.6 | 33.6 | 34.5 | 1-1/2 |
| Current machine average | | | | 26.4 | | | 10.5 | | | 32.0 | | | 29.0 | |
| Cumulative machine average | | | | 26.6 | | | 10.3 | | | 34.2 | | | 30.6 | |
| Machine factor, % | | | | 99.5 | | | 101.7 | | | 93.6 | | | 94.5 | |
| Machine index, % | | | | 97.4 | | | 102.1 | | | 87.4 | | | 87.2 | |

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE I

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| I-1 | 12-31-62 | 1-31-63 | 2566 | 26.4 | 10.3 | 10.0 | 10.1 | 39.0 | 37.2 | 37.7 | 33.0 | 32.2 | 32.8 | 1-1/2 |
| I-2 | 1- 5-63 | 1-31-63 | 927 | 26.3 | 10.5 | 10.0 | 10.2 | 36.6 | 34.2 | 35.4 | 31.8 | 30.2 | 31.1 | 1-1/2 |
| I-3 | 1-12-63 | 1-31-63 | 2405 | 27.6 | 11.1 | 10.7 | 10.9 | 40.8 | 38.4 | 40.0 | 36.0 | 32.4 | 33.8 | 1/2 |
| I-4 | 1-30-63 | 2- 7-63 | 6440 | 26.5 | 10.8 | 9.8 | 10.0 | 39.0 | 36.6 | 37.7 | 31.4 | 31.0 | 31.1 | 1-1/2 |
| I-5 | 1-31-63 | 2-12-63 | 6808 | 26.9 | 10.9 | 10.1 | 10.5 | 37.2 | 34.8 | 36.2 | 33.4 | 31.0 | 32.6 | 1-1/2 |
| I-6 | 2- 2-63 | 2-12-63 | 263 | 26.1 | 10.0 | 9.7 | 9.8 | 35.4 | 34.2 | 34.9 | 35.2 | 31.8 | 33.2 | 1-1/2 |
| I-7 | 2- 5-63 | 2-12-63 | 885 | 27.1 | 10.8 | 10.2 | 10.5 | 39.0 | 37.2 | 37.6 | 35.2 | 33.4 | 34.1 | 1-1/2 |
| I-8 | 2-10-63 | 2-22-63 | 1661 | 27.4 | 10.6 | 10.1 | 10.4 | 42.6 | 33.6 | 37.9 | 33.2 | 31.8 | 32.5 | 1-1/2 |
| I-9 | 3- 5-63 | 3-14-63 | 1028 | 26.7 | 10.9 | 10.0 | 10.3 | 37.2 | 32.4 | 35.0 | 33.6 | 30.8 | 32.4 | 1-1/2 |
| I-10 | 3- 9-63 | 3-19-63 | 1971 | 27.6 | 10.6 | 10.3 | 10.5 | 41.4 | 35.4 | 39.1 | 37.4 | 34.2 | 35.5 | 1-1/2 |
| I-11 | 3-10-63 | 3-19-63 | 2024 | 26.5 | 10.6 | 10.0 | 10.2 | 39.0 | 37.2 | 38.3 | 35.2 | 32.0 | 33.7 | 1-1/2 |
| I-12 | 3-11-63 | 3-19-63 | 2278 | 26.4 | 10.5 | 10.0 | 10.3 | 34.8 | 32.4 | 33.2 | 31.4 | 30.4 | 31.0 | 1-1/2 |
| Current machine average | | | | 26.8 | | | 10.3 | | | 36.9 | | | 32.8 | |
| Cumulative machine average | | | | 26.7 | | | 10.3 | | | 37.1 | | | 33.5 | |
| Machine factor, % | | | | 100.3 | | | 100.0 | | | 99.6 | | | 98.0 | |
| Machine index, % | | | | 98.8 | | | 100.0 | | | 100.7 | | | 98.8 | |

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE J

February and March, 1963
(Type of Medium: Bogus)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| J-1 | 1-12-63 | 1-31-63 | 156 | 26.6 | 10.2 | 8.8 | 9.5 | 37.8 | 28.8 | 32.6 | 30.6 | 27.0 | 28.3 | 1-1/2 |
| J-2 | 1-12-63 | 2- 5-63 | 157 | 26.3 | 10.7 | 9.3 | 10.0 | 33.6 | 28.8 | 30.7 | 29.0 | 25.8 | 28.0 | 1-1/2 |
| J-3 | 1-31-63 | 2-22-63 | 158 | 26.8 | 10.1 | 9.1 | 9.7 | 38.4 | 34.8 | 36.0 | 33.2 | 28.4 | 31.2 | 1-1/2 |
| J-4 | 1-31-63 | 2-22-63 | 159 | 26.5 | 10.7 | 9.6 | 10.0 | 39.0 | 34.2 | 36.2 | 31.6 | 30.6 | 31.0 | 1-1/2 |
| J-5 | 2- 1-63 | 2-22-63 | 160 | 27.2 | 10.1 | 9.2 | 9.8 | 40.8 | 34.8 | 37.3 | 33.4 | 31.2 | 32.5 | 1-1/2 |
| J-6 | 2- 1-63 | 2-22-63 | 161 | 26.8 | 10.2 | 9.3 | 9.9 | 39.6 | 33.6 | 37.8 | 32.4 | 29.6 | 31.0 | 1-1/2 |
| J-7 | 2-17-63 | 2-22-63 | 162 | 26.7 | 10.2 | 8.6 | 9.4 | 37.2 | 32.4 | 35.3 | 31.0 | 28.4 | 29.4 | 1-1/2 |
| J-8 | 2-17-63 | 2-22-63 | 163 | 27.1 | 10.1 | 9.0 | 9.3 | 37.2 | 31.2 | 34.9 | 32.6 | 28.8 | 30.6 | 1-1/2 |
| Current machine average | | | | 26.7 | | | 9.7 | | | 35.1 | | | 30.3 | |
| Cumulative machine average | | | | 28.3 | | | 9.8 | | | 34.3 | | | 31.3 | |
| Machine factor, % | | | | 94.6 | | | 98.7 | | | 102.3 | | | 96.6 | |
| Machine index, % | | | | 98.6 | | | 94.5 | | | 95.8 | | | 91.2 | |

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE K

February and March, 1963
(Type of Medium: Semichemical)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K-1 | 3- 6-63 | 3-14-63 | 225 | 27.1 | 10.3 | 10.0 | 10.1 | 37.8 | 35.4 | 36.5 | 32.6 | 31.2 | 31.9 | 1-1/2 |
| Current machine average | | | | 27.1 | | | 10.1 | | | 36.5 | | | 31.9 | |
| Cumulative machine average | | | | 26.8 | | | 10.4 | | | 36.1 | | | 32.0 | |
| Machine factor, % | | | | 100.9 | | | 96.8 | | | 101.1 | | | 99.7 | |
| Machine index, % | | | | 100.0 | | | 98.1 | | | 99.5 | | | 96.2 | |

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE L

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| L-1 | 2- 5-63 | 2-19-63 | -- | 26.7 | 10.3 | 9.8 | 10.0 | 40.8 | 39.0 | 39.7 | 38.0 | 35.0 | 36.1 | 1-1/2 |
| L-2 | 2- 7-63 | 2-19-63 | -- | 26.8 | 10.5 | 9.9 | 10.2 | 38.4 | 36.0 | 37.1 | 35.2 | 35.0 | 35.1 | 1-1/2 |
| L-3 | 2- 8-63 | 2-19-63 | -- | 26.0 | 10.0 | 9.5 | 9.8 | 39.0 | 37.2 | 38.4 | 35.8 | 34.0 | 35.1 | 1 |
| L-4 | 2-14-63 | 2-19-63 | -- | 27.1 | 11.0 | 10.1 | 10.4 | 40.2 | 36.6 | 38.0 | 34.6 | 31.8 | 33.3 | 1-1/2 |
| L-5 | 3 -6-63 | 3-21-63 | -- | 26.9 | 10.3 | 9.7 | 10.0 | 42.0 | 39.0 | 40.4 | 36.4 | 33.8 | 34.6 | 1-1/2 |
| L-6 | 3 -8-63 | 3-21-63 | -- | 26.6 | 10.3 | 10.0 | 10.0 | 41.4 | 39.0 | 40.2 | 36.2 | 33.4 | 34.4 | 1-1/2 |
| L-7 | 3-11-63 | 3-21-63 | -- | 26.7 | 10.2 | 9.7 | 10.0 | 41.4 | 39.0 | 39.8 | 34.2 | 31.8 | 32.9 | 1-1/2 |
| L-8 | 3-13-63 | 3-21-63 | -- | 26.8 | 10.4 | 9.8 | 10.2 | 42.6 | 37.2 | 40.2 | 35.4 | 33.2 | 34.7 | 1-1/2 |
| Current machine average | | | | 26.7 | | | 10.1 | | | 39.2 | | | 34.5 | |
| Cumulative machine average | | | | 26.8 | | | 10.3 | | | 38.2 | | | 33.9 | |
| Machine factor, % | | | | 99.6 | | | 98.0 | | | 102.8 | | | 101.8 | |
| Machine index, % | | | | 98.5 | | | 98.2 | | | 107.0 | | | 104.0 | |

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE M

February and March, 1963
(Type of Medium: Semichemical)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M-1 | 1-18-63 | 2-12-63 | 518 | 26.7 | 11.6 | 10.8 | 11.2 | 38.4 | 33.6 | 36.1 | 33.4 | 32.0 | 32.8 | Min. |
| M-2 | 1-22-63 | 2-12-63 | 646 | 26.3 | 10.8 | 9.5 | 10.3 | 36.0 | 28.8 | 34.1 | 33.6 | 31.4 | 32.0 | 1-1/2 |
| M-3 | 1-30-63 | 2-12-63 | 895 | 27.3 | 12.0 | 10.2 | 11.1 | 42.0 | 38.4 | 40.4 | 35.6 | 32.2 | 34.5 | 1 |
| M-4 | 2-14-63 | 3- 4-63 | 395 | 26.0 | 9.8 | 9.0 | 9.4 | 38.4 | 31.8 | 35.8 | 31.8 | 30.6 | 31.1 | 1-1/2 |
| M-5 | 2-18-63 | 3- 4-63 | 513 | 26.8 | 10.7 | 9.7 | 10.2 | 42.6 | 37.2 | 39.8 | 37.0 | 35.8 | 36.3 | 1/2 |
| M-6 | 2-28-63 | 3-13-63 | 809 | 26.3 | 10.0 | 9.2 | 9.8 | 36.6 | 30.6 | 33.7 | 31.6 | 29.0 | 30.6 | 1/2 |
| M-7 | 3- 1-63 | 3-13-63 | 4 | 26.4 | 11.1 | 10.0 | 10.4 | 36.6 | 34.2 | 35.3 | 32.8 | 29.8 | 31.3 | Note[a] |
| Current machine average | | | | 26.5 | | | 10.3 | | | 36.5 | | | 32.7 | |
| Cumulative machine average | | | | 26.8 | | | 10.0 | | | 37.4 | | | 34.6 | |
| Machine factor, % | | | | 99.2 | | | 103.4 | | | 97.6 | | | 94.4 | |
| Machine index, % | | | | 97.9 | | | 100.0 | | | 99.4 | | | 98.4 | |

[a]Maximum speed at which this roll could be corrugated with minimum tension was 575 f.p.m.

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE N

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| N-1 | 2-23-63 | 3- 8-63 | 1 | 28.1 | 11.3 | 10.8 | 11.1 | 37.8 | 34.2 | 35.6 | 32.4 | 29.8 | 30.7 | 1 |
| N-2 | 2-23-63 | 3- 8-63 | 2 | 27.8 | 11.1 | 10.8 | 11.0 | 36.6 | 34.2 | 35.5 | 31.8 | 30.2 | 30.9 | 1/2 |
| N-3 | 2-25-63 | 3- 8-63 | 3 | 28.2 | 12.1 | 11.1 | 11.6 | 37.8 | 36.6 | 37.1 | 32.2 | 30.8 | 31.5 | 1/2 |
| N-4 | 2-28-63 | 3- 8-63 | 4 | 26.4 | 10.5 | 10.0 | 10.1 | 39.0 | 33.0 | 35.6 | 31.6 | 28.6 | 30.2 | 1-1/2 |
| Current machine average | | | | 27.6 | | | 10.9 | | | 36.0 | | | 30.8 | |
| Cumulative machine average | | | | -- | | | -- | | | -- | | | -- | |
| Machine factor, % | | | | -- | | | -- | | | -- | | | -- | |
| Machine index, % | | | | 101.9 | | | 106.6 | | | 98.1 | | | 92.9 | |

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE O

February and March, 1963
(Type of Medium: Semichemical)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O-1 | 1-22-63 | 2- 4-63 | 867 | 27.5 | 10.8 | 10.3 | 10.6 | 34.2 | 31.2 | 32.2 | 29.4 | 27.6 | 28.5 | 1-1/2 |
| O-2 | 1-22-63 | 2- 4-63 | 868 | 28.0 | 10.9 | 9.8 | 10.3 | 36.6 | 30.0 | 33.4 | 30.0 | 28.0 | 28.7 | 1 |
| O-3 | 1-31-63 | 2- 8-63 | 875 | 29.2 | 11.7 | 11.2 | 11.4 | 35.4 | 33.6 | 34.4 | 30.4 | 28.6 | 29.4 | 1/2 |
| O-4 | 1-31-63 | 2- 8-63 | 876 | 28.5 | 11.4 | 11.0 | 11.2 | 34.8 | 31.8 | 32.9 | 31.0 | 27.8 | 29.2 | 1 |
| O-5 | 2-13-63 | 2-22-63 | 885 | 27.7 | 11.0 | 10.4 | 10.8 | 33.0 | 30.0 | 32.0 | 31.2 | 26.4 | 28.8 | 1-1/2 |
| O-6 | 2-13-63 | 2-22-63 | 886 | 28.7 | 11.2 | 10.0 | 10.9 | 36.6 | 32.4 | 34.7 | 30.8 | 27.6 | 29.3 | 1-1/2 |
| O-7 | 3- 1-63 | 3-12-63 | 891 | 28.8 | 11.3 | 10.9 | 11.1 | 31.2 | 28.8 | 30.5 | 29.6 | 28.0 | 28.6 | 1 |
| O-8 | 3- 1-63 | 3-12-63 | 892 | 28.2 | 11.8 | 11.0 | 11.4 | 32.4 | 29.4 | 30.8 | 27.2 | 24.8 | 25.9 | 1 |
| O-9 | 3- 8-63 | 3-20-63 | 899 | 27.9 | 12.0 | 11.2 | 11.7 | 37.2 | 34.8 | 35.9 | 31.6 | 28.8 | 30.7 | 1 |
| O-10 | 3- 8-63 | 3-20-63 | 900 | 28.1 | 11.7 | 10.8 | 11.2 | 36.0 | 32.4 | 34.6 | 31.8 | 29.4 | 30.4 | 1/2 |
| Current machine average | | | | 28.2 | | | 11.1 | | | 33.1 | | | 28.9 | |
| Cumulative machine average | | | | 28.0 | | | 10.9 | | | 36.0 | | | 31.6 | |
| Machine factor, % | | | | 100.9 | | | 100.9 | | | 92.1 | | | 91.6 | |
| Machine index, % | | | | 104.2 | | | 107.6 | | | 90.4 | | | 87.2 | |

TABLE XVIII

SUMMARY OF TEST RESULTS FOR MACHINE P

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| P-1 | 1-29-63 | 2-13-63 | 3 | 27.5 | 9.9 | 9.2 | 9.5 | 35.4 | 32.4 | 34.0 | 35.2 | 31.6 | 33.2 | 1-1/2 |
| P-2 | 2- 7-63 | 2-22-63 | 4 | 27.1 | 10.6 | 10.2 | 10.5 | 39.0 | 34.8 | 37.6 | 34.2 | 32.4 | 33.2 | Note[a] |
| P-3 | 2-11-63 | 2-22-63 | 5 | 27.2 | 9.8 | 9.0 | 9.5 | 36.0 | 32.4 | 34.1 | 33.0 | 30.8 | 31.6 | 1 |
| P-4 | 2-21-63 | 3- 1-63 | 6 | 28.0 | 10.2 | 9.8 | 9.9 | 37.8 | 34.2 | 35.8 | 34.4 | 30.8 | 32.3 | 1-1/2 |
| P-5 | 2-25-63 | 3- 4-63 | 7 | 27.6 | 11.0 | 10.0 | 10.2 | 31.2 | 25.2 | 29.3 | 28.6 | 26.4 | 27.3 | 1 |
| P-6 | 3- 6-63 | 3-15-63 | 8 | 29.6 | 11.0 | 10.1 | 10.7 | 34.2 | 28.2 | 31.8 | 31.2 | 28.4 | 29.7 | 1-1/2 |
| Current machine average | | | | 27.8 | | | 10.1 | | | 33.7 | | | 31.2 | |
| Cumulative machine average | | | | 27.0 | | | 10.3 | | | 35.4 | | | 33.3 | |
| Machine factor, % | | | | 102.8 | | | 97.8 | | | 95.3 | | | 93.8 | |
| Machine index, % | | | | 102.6 | | | 98.0 | | | 92.0 | | | 94.0 | |

[a]Maximum speed at which this roll could be corrugated with minimum tension was 575 f.p.m.

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE Q

February and March, 1963
(Type of Medium: Semichemical)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q-1 | 1-22-63 | 1-30-63 | 344 | 26.8 | 11.0 | 9.6 | 10.4 | 42.0 | 37.8 | 38.9 | 34.8 | 32.8 | 34.1 | 1 |
| Q-2 | 1-31-63 | 2-12-63 | 345 | 26.1 | 10.9 | 10.0 | 10.4 | 39.6 | 35.4 | 38.0 | 34.8 | 32.8 | 33.9 | 1-1/2 |
| Q-3 | 2-14-63 | 2-20-63 | 346 | 26.1 | 10.9 | 10.2 | 10.4 | 40.8 | 35.4 | 38.2 | 36.6 | 33.2 | 35.2 | 1-1/2 |
| Q-4 | 2-22-63 | 2-28-63 | 347 | 26.4 | 10.9 | 10.0 | 10.6 | 40.8 | 37.2 | 39.4 | 37.6 | 33.8 | 36.0 | 1 |
| Q-5 | 3- 5-63 | 3-12-63 | 348 | 26.8 | 10.8 | 9.9 | 10.4 | 45.0 | 37.2 | 41.6 | 37.6 | 35.6 | 36.6 | 1-1/2 |
| Current machine average | | | | 26.5 | | | 10.4 | | | 39.2 | | | 35.1 | |
| Cumulative machine average | | | | 26.6 | | | 10.6 | | | 38.8 | | | 35.3 | |
| Machine factor, % | | | | 99.6 | | | 98.2 | | | 101.0 | | | 99.6 | |
| Machine index, % | | | | 97.6 | | | 101.5 | | | 106.9 | | | 105.9 | |

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE R

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq.ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| R-1 | 1-22-63 | 1-29-63 | 51 | 26.1 | 10.0 | 9.0 | 9.5 | 37.8 | 35.4 | 36.6 | 32.2 | 29.8 | 31.2 | 1-1/2 |
| R-2 | 1-27-63 | 1-31-63 | 52 | 26.4 | 10.6 | 9.9 | 10.2 | 37.2 | 31.8 | 33.6 | 29.4 | 26.8 | 27.9 | 1-1/2 |
| R-3 | 2- 3-63 | 2- 7-63 | 53 | 26.3 | 10.2 | 9.8 | 9.9 | 39.0 | 31.8 | 34.9 | 30.4 | 29.4 | 29.8 | 1-1/2 |
| R-4 | 2-12-63 | 2-15-63 | 54 | 26.9 | 10.2 | 9.2 | 9.7 | 37.2 | 28.2 | 34.1 | 33.0 | 30.4 | 31.7 | 1-1/2 |
| R-5 | 2-19-63 | 2-26-63 | 55 | 26.2 | 9.5 | 8.9 | 9.2 | 42.0 | 38.4 | 39.8 | 34.8 | 32.6 | 33.6 | 1-1/2 |
| R-6 | 2-27-63 | 3- 4-63 | 56 | 26.3 | 10.3 | 9.8 | 10.1 | 36.6 | 32.4 | 33.8 | 29.6 | 27.6 | 28.2 | 1-1/2 |
| R-7 | 3- 5-63 | 3-11-63 | 57 | 26.8 | 10.2 | 9.7 | 9.9 | 37.2 | 32.4 | 34.9 | 30.2 | 28.2 | 29.2 | 1-1/2 |
| R-8 | 3-12-63 | 3-18-63 | 58 | 25.5 | 10.3 | 9.4 | 9.8 | 36.6 | 33.0 | 34.7 | 31.4 | 28.2 | 29.4 | 1-1/2 |
| R-9 | 3-19-63 | 3-25-63 | 59 | 26.5 | 10.1 | 9.2 | 9.8 | 39.6 | 35.4 | 37.9 | 35.8 | 33.0 | 34.5 | 1-1/2 |
| Current machine average | | | | 26.3 | | | 9.8 | | | 35.6 | | | 30.6 | |
| Cumulative machine average | | | | 26.7 | | | 9.7 | | | 36.0 | | | 32.1 | |
| Machine factor, % | | | | 98.6 | | | 100.8 | | | 98.9 | | | 95.3 | |
| Machine index, % | | | | 97.1 | | | 95.3 | | | 97.1 | | | 92.2 | |

TABLE XXI

SUMMARY OF TEST RESULTS FOR MACHINE S

February and March, 1963
(Type of Medium: Semichemical)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-1 | 1- 8-63 | 2- 7-63 | 72 | 27.1 | 10.2 | 9.5 | 9.9 | 39.0 | 35.4 | 37.8 | 34.2 | 32.2 | 32.9 | 1-1/2 |
| S-2 | 1-29-63 | 2- 7-63 | 73 | 27.4 | 11.0 | 10.2 | 10.8 | 36.0 | 33.0 | 34.6 | 31.2 | 27.4 | 29.2 | 1-1/2 |
| Current machine average | | | | 27.3 | | | 10.4 | | | 36.2 | | | 31.0 | |
| Cumulative machine average | | | | 27.4 | | | 10.1 | | | 39.5 | | | 35.7 | |
| Machine factor, % | | | | 99.6 | | | 103.4 | | | 91.7 | | | 87.0 | |
| Machine index, % | | | | 100.5 | | | 101.1 | | | 98.7 | | | 93.5 | |

TABLE XXII

SUMMARY OF TEST RESULTS FOR MACHINE T

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| T-1 | 1- 6-63 | 1-31-63 | 520 | 26.8 | 10.8 | 10.1 | 10.4 | 42.6 | 36.0 | 39.4 | 34.6 | 32.6 | 33.7 | 1/2 |
| T-2 | 1-13-63 | 2- 6-63 | 521 | 26.9 | 11.0 | 10.4 | 10.8 | 40.8 | 35.4 | 37.8 | 33.4 | 30.0 | 32.0 | 1-1/2 |
| T-3 | 1-18-63 | 2- 6-63 | 522 | 27.4 | 10.9 | 10.3 | 10.7 | 39.0 | 36.0 | 37.9 | 33.6 | 31.0 | 32.4 | 1/2 |
| T-4 | 1-28-63 | 2-15-63 | 523 | 26.6 | 11.1 | 10.2 | 10.7 | 37.8 | 36.0 | 36.7 | 34.6 | 31.6 | 32.8 | 1/2 |
| T-5 | 2- 3-63 | 2-21-63 | 524 | 27.0 | 10.9 | 10.5 | 10.7 | 42.0 | 34.8 | 38.5 | 35.6 | 31.8 | 33.3 | Min. |
| T-6 | 2-10-63 | 3-15-63 | 525 | 26.6 | 10.2 | 10.0 | 10.0 | 37.8 | 33.6 | 35.9 | 32.2 | 30.2 | 31.6 | 1-1/2 |
| T-7 | 2-20-63 | 3-15-63 | 526 | 27.9 | 10.9 | 10.0 | 10.3 | 38.4 | 34.2 | 36.8 | 33.8 | 31.0 | 32.5 | 1-1/2 |
| T-8 | 2-27-63 | 3-15-63 | 527 | 28.1 | 10.9 | 10.0 | 10.4 | 43.8 | 36.0 | 38.4 | 36.8 | 33.6 | 35.1 | 1-1/2 |
| T-9 | 3- 2-63 | 3-15-63 | 528 | 26.7 | 10.5 | 10.0 | 10.2 | 38.4 | 35.4 | 37.1 | 32.8 | 31.0 | 31.9 | 1 |
| Current machine average | | | | 27.1 | | | 10.5 | | | 37.6 | | | 32.8 | |
| Cumulative machine average | | | | 27.5 | | | 10.5 | | | 38.5 | | | 34.9 | |
| Machine factor, % | | | | 98.6 | | | 100.0 | | | 97.7 | | | 93.9 | |
| Machine index, % | | | | 100.0 | | | 101.9 | | | 102.6 | | | 98.9 | |

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE U

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq.ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| U-1 | 1-30-63 | 2- 5-63 | 869 | 27.5 | 11.0 | 10.0 | 10.5 | 37.8 | 27.0 | 34.3 | 30.2 | 26.8 | 28.8 | 1-1/2 |
| U-2 | 1-30-63 | 2- 5-63 | 870 | 27.3 | 10.8 | 10.1 | 10.3 | 38.4 | 31.2 | 35.0 | 30.6 | 28.0 | 29.8 | 1 |
| U-3 | 2-11-63 | 2-18-63 | 877 | 26.7 | 10.1 | 9.7 | 9.8 | 39.0 | 34.2 | 36.5 | 33.6 | 29.6 | 31.4 | 1-1/2 |
| U-4 | 2-11-63 | 2-18-63 | 878 | 26.9 | 10.1 | 9.7 | 9.9 | 38.4 | 31.2 | 36.1 | 32.6 | 29.0 | 30.8 | 1-1/2 |
| U-5 | 2-25-63 | 3- 1-63 | 885 | 28.1 | 10.9 | 10.2 | 10.6 | 40.8 | 36.6 | 38.2 | 32.2 | 29.2 | 30.6 | 1-1/2 |
| U-6 | 2-25-63 | 3- 1-63 | 886 | 27.6 | 10.5 | 10.0 | 10.3 | 37.2 | 30.6 | 34.8 | 30.0 | 26.6 | 28.4 | 1-1/2 |
| U-7 | 3- 6-63 | 3-12-63 | 893 | 28.0 | 10.2 | 9.7 | 10.0 | 37.2 | 32.4 | 35.3 | 32.0 | 29.2 | 30.2 | 1-1/2 |
| U-8 | 3- 6-63 | 3-12-63 | 894 | 27.3 | 10.1 | 9.8 | 10.0 | 36.6 | 33.0 | 34.9 | 31.4 | 30.0 | 30.8 | 1-1/2 |
| Current machine average | | | | 27.4 | | | 10.2 | | | 35.6 | | | 30.1 | |
| Cumulative machine average | | | | 27.0 | | | 10.2 | | | 37.4 | | | 33.6 | |
| Machine factor, % | | | | 101.5 | | | 100.0 | | | 95.2 | | | 89.6 | |
| Machine index, % | | | | 101.1 | | | 99.0 | | | 97.2 | | | 90.7 | |

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE V

February and March, 1963
(Type of Medium: Semichemical)

| Code | Date Made | Date Received | Mill Roll No. | Basis Weight, lb./M sq. ft. | Caliper, points | | | Concora Flat Crush, p.s.i. | | | Single-Face Flat Crush, p.s.i. | | | Runnability, maximum tension at 600 f.p.m., lb./in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Av. | Max. | Min. | Av. | Max. | Min. | Av. | |
| V-1 | 2-15-63 | 2-28-63 | B-1 | 27.4 | 10.4 | 9.6 | 10.1 | 34.8 | 31.2 | 32.9 | 29.0 | 27.4 | 27.8 | 1 |
| V-2 | 2-15-63 | 2-28-63 | B-2 | 27.3 | 10.8 | 9.7 | 10.2 | 36.0 | 28.2 | 33.5 | 28.8 | 26.0 | 27.6 | 1/2 |
| V-3 | 2-15-63 | 2-28-63 | B-3 | 27.7 | 10.5 | 9.8 | 10.0 | 34.2 | 31.8 | 33.4 | 28.6 | 26.8 | 27.8 | Min. |
| V-4 | 2-15-63 | 2-28-63 | B-4 | 27.9 | 10.3 | 9.4 | 10.1 | 33.0 | 30.0 | 31.8 | 29.4 | 26.0 | 27.6 | Note[a] |
| V-5 | 2-28-63 | 3-14-63 | B-1 | 27.4 | 10.0 | 9.1 | 9.8 | 33.0 | 31.2 | 32.3 | 32.4 | 29.8 | 31.2 | 1/2 |
| V-6 | 2-28-63 | 3-14-63 | B-2 | 27.2 | 10.0 | 9.2 | 9.9 | 34.8 | 32.4 | 33.6 | 31.0 | 29.6 | 30.4 | 1/2 |
| V-7 | 2-28-63 | 3-14-63 | B-3 | 27.4 | 10.5 | 9.1 | 10.0 | 37.2 | 31.2 | 34.8 | 33.8 | 30.6 | 32.4 | 1 |
| V-8 | 2-28-63 | 3-14-63 | B-4 | 27.8 | 10.1 | 9.3 | 9.9 | 34.8 | 32.4 | 34.0 | 32.4 | 30.0 | 31.5 | 1 |
| Current machine average | | | | 27.5 | | | 10.0 | | | 33.3 | | | 29.5 | |
| Cumulative machine average | | | | 26.7 | | | 9.9 | | | 32.9 | | | 30.4 | |
| Machine factor, % | | | | 103.1 | | | 101.3 | | | 101.0 | | | 97.0 | |
| Machine index, % | | | | 101.5 | | | 97.3 | | | 90.7 | | | 89.0 | |

[a] Maximum speed at which this roll could be corrugated with minimum tension was 400 f.p.m.

average test results obtained on each sample lot are shown for all tests except basis weight for which only the average is shown; in addition the over-all average result for all sample lots submitted from a given machine is shown for each test. The latter over-all averages are reported as "current machine averages." A cumulative machine average is also shown and is calculated by averaging the current machine averages for the previous twelve periods (excluding the current period). Also shown for each machine in Tables III to XXIV are the machine factor and machine index which are defined as follows:

$$\frac{\text{current machine average}}{\text{cumulative machine average}} \times 100 = \text{machine factor (\%)}$$

$$\frac{\text{current machine average}}{\text{cumulative F.K.I. average}} \times 100 = \text{machine index (\%)}$$

The machine factor and machine index provide a means for comparing the current machine average with either the previous results for that particular machine or with the cumulative results for all machines—i.e., the cumulative F.K.I. average.

## DISCUSSION OF RESULTS

Shown below from Table II are the maximum and minimum current machine averages noted for each test during the current period (February and March, 1963); the current machine average is the average of the results obtained on all rolls submitted from a given machine during the current period. Also given for each test is the current F.K.I. average which is determined by averaging the current machine averages for the current period and is indicative of the test level being maintained by the industry as a whole to the extent that the industry is represented by the participating machines:

| | Maximum Current Machine Average | Minimum Current Machine Average | Current F.K.I. Average |
|---|---|---|---|
| Basis wt., lb. | 28.4 | 26.3 | 27.1 |
| Caliper, pt. | 11.1 | 9.0 | 10.3 |
| Concora flat crush, p.s.i. | 40.0 | 32.0 | 36.5 |
| Single-face flat crush, p.s.i. | 35.1 | 28.9 | 32.1 |

The runnability data for the 152 rolls evaluated during the current period are summarized as follows:

| Runnability | Number of Rolls | Percentage of Total Rolls |
|---|---|---|
| Less than 600 f.p.m. with minimum tension | 5 | 3.3 |
| 600 f.p.m.—minimum tension | 3 | 2.0 |
| 600 f.p.m.—1/2 lb. per in. tension | 18 | 11.8 |
| 600 f.p.m.—1 lb. per in. tension | 23 | 15.1 |
| 600 f.p.m.—1-1/2 lb. per in. tension | 103 | 67.8 |

In Table XXV a comparison of Institute and mill Concora flat crush test results obtained on conditioned specimens is given for each machine for the current period. The inclusion of these comparisons is made possible by the fact that interested participants submit their Concora flat crush test results to The Institute of Paper Chemistry. This affords each participant the opportunity to review the level of agreement for his data with the levels shown for the other participants. Data sheets for supplying this information may be obtained from the Institute. Comparisons of this kind are a helpful adjunct to other calibration procedures. Shown in Table XXV are (1) the Institute and mill Concora averages for each roll included in these comparisons, (2) the difference between the roll average based on Institute data and that based on mill data, (3) the Institute and mill averages based on all rolls included in the comparison, and (4) the difference between these over-all averages.

The Concora flat crush data shown in Table XXV are summarized in Part I of Table XXVI where for each machine the following information is given: (1) Current machine average based on Institute data, (2) current machine average based on mill data, (3) the average difference—that is, the difference between the current machine average based on Institute data and that based on mill data, and (4) the maximum difference encountered in comparing Institute and mill test averages for individual rolls. In Part II of Table XXVI the average differences given in Part I have been converted to per cent. Comparative data from the previous two reports are also included in Part II of Table XXVI. It may be seen in Part II of Table XXVI that, for the current period, the highest average difference of 7.8% was associated with Machine H and the lowest of 0.8% with Machine R.

In Table XXVII a summary of the agreement between Institute and mill Concora flat crush data is given for the current period, and comparative data

TABLE XXV

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR FEBRUARY AND MARCH, 1963

**Machine A**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| A-1 | -- | 2- 5-63 | 36.7 | 38.3 | +1.6 |
| A-2 | -- | 2- 7-63 | 36.7 | 38.5 | +1.8 |
| A-3 | -- | 2- 9-63 | 36.8 | 39.1 | +2.3 |
| A-4 | -- | 2-13-63 | 36.7 | 40.1 | +3.4 |
| A-5 | -- | 3- 6-63 | 36.2 | 35.3 | -0.9 |
| A-6 | -- | 3- 8-63 | 37.6 | 40.0 | +2.4 |
| A-7 | -- | 3-12-63 | 36.6 | 36.0 | -0.6 |
| A-8 | -- | 3-13-63 | 38.3 | 38.5 | +0.2 |
| Current Machine Av. | | | 37.0 | 38.2 | +1.2 |

**Machine D**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| D-1 | 684 | 1-25-63 | 40.1 | 40.1 | 0.0 |
| D-2 | 685 | 3-12-63 | 40.0 | 38.5 | -1.5 |
| Current Machine Av. | | | 40.0 | 39.3 | -0.7 |

**Machine E**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| E-1 | 392 | 1-11-63 | 41.5 | 41.8 | +0.3 |
| E-2 | 393 | 1-16-63 | 40.2 | 42.1 | +1.9 |
| E-3 | 394 | 1-24-63 | 40.3 | 40.9 | +0.6 |
| E-4 | 395 | 2- 4-63 | 36.8 | 34.6 | -2.2 |
| E-5 | 396 | 2-11-63 | 37.0 | 37.3 | +0.3 |
| E-6 | 397 | 2-19-63 | 37.9 | 35.5 | -2.4 |
| E-7 | 398 | 2-26-63 | 36.7 | 34.2 | -2.5 |
| Current Machine Av. | | | 38.6 | 38.1 | -0.5 |

**Machine F**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| F-1 | -- | 2- 5-63 | 36.5 | 36.8 | +0.3 |
| F-2 | -- | 2- 6-63 | 37.1 | 37.0 | -0.1 |
| F-3 | -- | 2- 7-63 | 36.4 | 38.6 | +2.2 |
| F-4 | -- | 2- 8-63 | 38.8 | 38.5 | -0.3 |
| F-5 | -- | 3- 6-63 | 35.8 | 37.3 | +1.5 |
| F-6 | -- | 3- 8-63 | 35.2 | 35.2 | 0.0 |
| F-7 | -- | 3-11-63 | 34.1 | 35.8 | +1.7 |
| F-8 | -- | 3-13-63 | 37.1 | 36.5 | -0.6 |
| Current Machine Av. | | | 36.3 | 37.0 | +0.7 |

**Machine G**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| G-1 | 529 | 2- 7-63 | 39.8 | 42.1 | +2.3 |
| G-2 | 530 | 2- 8-63 | 36.1 | 39.0 | +2.9 |
| G-3 | 531 | 2-19-63 | 38.3 | 41.5 | +3.2 |
| G-4 | 532 | 2-21-63 | 37.2 | 37.9 | +0.7 |
| G-5 | 533 | 2-22-63 | 38.8 | 40.9 | +2.1 |
| G-6 | 534 | 2-23-63 | 40.4 | 41.0 | +0.6 |
| G-7 | 535 | 3- 1-63 | 40.1 | 40.6 | +0.5 |
| G-8 | 536 | 3- 9-63 | 40.7 | 42.7 | +2.0 |
| Current Machine Av. | | | 38.9 | 40.7 | +1.8 |

**Machine H**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| H-1 | 51 | 1-22-63 | 33.1 | 32.9 | -0.2 |
| H-2 | 52 | 1-27-63 | 33.7 | 34.6 | +0.9 |
| H-3 | 53 | 2- 3-63 | 31.9 | 34.1 | +2.2 |
| H-4 | 54 | 2-12-63 | 30.2 | 34.1 | +3.9 |
| H-5 | 55 | 2-18-63 | 31.4 | 34.3 | +2.9 |
| H-6 | 56 | 2-27-63 | 29.9 | 32.3 | +2.4 |
| H-7 | 57 | 3- 6-63 | 29.6 | 33.2 | +3.6 |
| H-8 | 58 | 3-12-63 | 32.0 | 35.4 | +3.4 |
| H-9 | 59 | 3-19-63 | 36.4 | 39.8 | +3.4 |
| Current Machine Av. | | | 32.0 | 34.5 | +2.5 |

**Machine I**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| I-1 | 2566 | 12-13-62 | 37.7 | 35.3 | -2.4 |
| I-2 | 927 | 1- 5-63 | 35.4 | 34.6 | -0.8 |
| I-3 | 2405 | 1-12-63 | 40.0 | 35.6 | -4.4 |
| I-4 | 6440 | 1-30-63 | 37.7 | 35.3 | -2.4 |
| I-5 | 6808 | 1-31-63 | 36.2 | 36.0 | -0.2 |
| I-6 | 263 | 2- 2-63 | 34.9 | 36.5 | +1.6 |
| I-7 | 885 | 2- 5-63 | 37.6 | 38.2 | +0.6 |
| I-8 | 1661 | 2-10-63 | 37.9 | 36.1 | -1.8 |
| I-9 | 1028 | 3- 5-63 | 35.0 | 34.7 | -0.3 |
| I-10 | 1971 | 3- 9-63 | 39.1 | 36.0 | -3.1 |
| I-11 | 2024 | 3-10-63 | 38.3 | 36.6 | -1.7 |
| I-12 | 2278 | 3-11-63 | 33.2 | 36.1 | +2.9 |
| Current Machine Av. | | | 36.9 | 35.9 | -1.0 |

**Machine L**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| L-1 | -- | 2- 5-63 | 39.7 | 40.0 | +0.3 |
| L-2 | -- | 2- 7-63 | 37.1 | 40.3 | +3.2 |
| L-3 | -- | 2- 8-63 | 38.4 | 41.6 | +3.2 |
| L-4 | -- | 2-14-63 | 38.0 | 39.8 | +1.8 |
| L-5 | -- | 3- 6-63 | 40.4 | 38.9 | -1.5 |
| L-6 | -- | 3- 8-63 | 40.2 | 40.3 | +0.1 |
| L-7 | -- | 3-11-63 | 39.8 | 38.0 | -1.8 |
| L-8 | -- | 3-13-63 | 40.2 | 41.8 | +1.6 |
| Current Machine Av. | | | 39.2 | 40.1 | +0.9 |

**Machine M**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| M-1 | 518 | 1-18-63 | 36.1 | 34.3 | -1.8 |
| M-2 | 646 | 1-22-63 | 34.1 | 37.1 | +3.0 |
| M-3 | 895 | 1-30-63 | 40.4 | 37.8 | -2.6 |
| M-4 | 395 | 2-14-63 | 35.8 | 35.5 | -0.3 |
| M-6 | 809 | 2-28-63 | 33.7 | 32.3 | -1.4 |
| M-7 | 4 | 3- 1-63 | 35.3 | 33.6 | -1.7 |
| Current Machine Av. | | | 35.9 | 35.1 | -0.8 |

[a] This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXV (Continued)

INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR FEBRUARY AND MARCH, 1963

**Machine N**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| N-1 | 1 | 2-23-63 | 35.6 | 37.1 | +1.5 |
| N-2 | 2 | 2-23-63 | 35.5 | 36.5 | +1.0 |
| N-3 | 3 | 2-25-63 | 37.1 | 35.6 | -1.5 |
| N-4 | 4 | 2-28-63 | 35.6 | 31.9 | -3.7 |
| Current Machine Av. | | | 36.0 | 35.3 | -0.7 |

**Machine O**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| O-1 | 867 | 1-22-63 | 32.2 | 39.1 | +6.9 |
| O-2 | 868 | 1-22-63 | 33.4 | 34.8 | +1.4 |
| O-3 | 875 | 1-31-63 | 34.4 | 35.4 | +1.0 |
| O-4 | 876 | 1-31-63 | 32.9 | 33.6 | +0.7 |
| O-5 | 885 | 2-13-63 | 32.0 | 32.8 | +0.8 |
| O-6 | 886 | 2-13-63 | 34.7 | 34.8 | +0.1 |
| O-7 | 891 | 3- 1-63 | 30.5 | 33.0 | +2.5 |
| O-8 | 892 | 3- 1-63 | 30.8 | 34.7 | +3.9 |
| O-9 | 899 | 3- 8-63 | 35.9 | 34.7 | -1.2 |
| O-10 | 900 | 3- 8-63 | 34.6 | 34.3 | -0.3 |
| Current Machine Av. | | | 33.1 | 34.7 | +1.6 |

**Machine P**

| Code | Mill Roll No. | Date Made | Concora Flat Crush, p.s.i. Institute | Mill | Difference[a] |
|---|---|---|---|---|---|
| P-1 | 3 | 1-29-63 | 34.0 | 31.7 | -2.3 |
| P-2 | 4 | 2- 7-63 | 37.6 | 35.8 | -1.8 |
| P-3 | 5 | 2-11-63 | 34.1 | 34.7 | +0.6 |
| P-4 | 6 | 2-21-63 | 35.8 | 34.0 | -1.8 |
| P-5 | 7 | 2-25-63 | 29.3 | 27.2 | -2.1 |
| P-6 | 8 | 3- 6-63 | 31.8 | 31.0 | -0.8 |
| Current Machine Av. | | | 33.7 | 32.4 | -1.3 |

**Machine Q**

| | | | | | |
|---|---|---|---|---|---|
| Q-1 | 344 | 1-22-63 | 38.9 | 37.1 | -1.8 |
| Q-2 | 345 | 1-31-63 | 38.0 | 37.2 | -0.8 |
| Q-3 | 346 | 2-14-63 | 38.2 | 36.6 | -1.6 |
| Q-4 | 347 | 2-22-63 | 39.4 | 38.5 | -0.9 |
| Q-5 | 348 | 3- 5-63 | 41.6 | 39.5 | -2.1 |
| Current Machine Av. | | | 39.2 | 37.8 | -1.4 |

**Machine R**

| | | | | | |
|---|---|---|---|---|---|
| R-1 | 51 | 1-22-63 | 36.6 | 36.1 | -0.5 |
| R-2 | 52 | 1-27-63 | 33.6 | 32.8 | -0.8 |
| R-3 | 53 | 2- 3-63 | 34.9 | 35.6 | +0.7 |
| R-4 | 54 | 2-12-63 | 34.1 | 35.3 | +1.2 |
| R-5 | 55 | 2-19-63 | 39.8 | 41.6 | +1.8 |
| R-6 | 56 | 2-27-63 | 33.8 | 35.3 | +1.5 |
| R-7 | 57 | 3- 5-63 | 34.9 | 36.6 | +1.7 |
| R-8 | 58 | 3-12-63 | 34.7 | 33.7 | -1.0 |
| R-9 | 59 | 3-19-63 | 37.9 | 36.0 | -1.9 |
| Current Machine Av. | | | 35.6 | 35.9 | +0.3 |

**Machine T**

| | | | | | |
|---|---|---|---|---|---|
| T-1 | 520 | 1- 6-63 | 39.4 | 38.9 | -0.5 |
| T-2 | 521 | 1-13-63 | 37.8 | 38.2 | +0.4 |
| T-3 | 522 | 1-18-63 | 37.9 | 39.2 | +1.3 |
| T-4 | 523 | 1-28-63 | 36.7 | 39.2 | +2.5 |
| T-5 | 524 | 2- 3-63 | 38.5 | 39.4 | +0.9 |
| T-6 | 525 | 2-10-63 | 35.9 | 39.0 | +3.1 |
| T-7 | 526 | 2-20-63 | 36.8 | 39.4 | +2.6 |
| T-8 | 527 | 2-27-63 | 38.4 | 39.7 | +1.3 |
| T-9 | 528 | 3- 2-63 | 37.1 | 39.7 | +2.6 |
| Current Machine Av. | | | 37.6 | 39.2 | +1.6 |

**Machine U**

| | | | | | |
|---|---|---|---|---|---|
| U-1 | 869 | 1-30-63 | 34.3 | 34.4 | +0.1 |
| U-2 | 870 | 1-30-63 | 35.0 | 34.2 | -0.8 |
| U-3 | 877 | 2-11-63 | 36.5 | 36.3 | -0.2 |
| U-4 | 878 | 2-11-63 | 36.1 | 37.5 | +1.4 |
| U-5 | 885 | 2-25-63 | 38.2 | 36.4 | -1.8 |
| U-6 | 886 | 2-25-63 | 34.8 | 32.6 | -2.2 |
| U-7 | 893 | 3- 6-63 | 35.3 | 33.5 | -1.8 |
| U-8 | 894 | 3- 6-63 | 34.9 | 34.1 | -0.8 |
| Current Machine Av. | | | 35.6 | 34.9 | -0.7 |

**Machine V**

| | | | | | |
|---|---|---|---|---|---|
| V-1 | B-1 | 2-15-63 | 32.9 | 34.0 | +1.1 |
| V-2 | B-2 | 2-15-63 | 33.5 | 33.8 | +0.3 |
| V-3 | B-3 | 2-15-63 | 33.4 | 34.4 | +1.0 |
| V-4 | B-4 | 2-15-63 | 31.8 | 34.4 | +2.6 |
| V-5 | B-1 | 2-28-63 | 32.3 | 34.9 | +2.6 |
| V-6 | B-2 | 2-28-63 | 33.6 | 34.1 | +0.5 |
| V-7 | B-3 | 2-28-63 | 34.8 | 34.6 | -0.2 |
| V-8 | B-4 | 2-28-63 | 34.0 | 34.2 | +0.2 |
| Current Machine Av. | | | 33.3 | 34.3 | +1.0 |

[a]This difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXVI

PART I: A COMPARATIVE SUMMARY FOR EACH MACHINE OF THE CONCORA FLAT CRUSH AVERAGES BASED ON INSTITUTE DATA AND THOSE BASED ON MILL DATA

| Machine Code | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Rolls Compared | 8 | 0 | 0 | 2 | 7 | 8 | 8 | 9 | 12 | 0 | 0 | 8 | 6 | 4 | 10 | 6 | 5 | 9 | 0 | 9 | 8 | 8 |
| Concora Flat Crush, p.s.i. | | | | | | | | | | | | | | | | | | | | | | |
| Current Machine Av. (Institute)[a] | 37.0 | -- | -- | 40.0 | 38.6 | 36.3 | 38.9 | 32.0 | 36.9 | -- | -- | 39.2 | 35.9 | 36.0 | 33.1 | 33.7 | 39.2 | 35.6 | -- | 37.6 | 35.6 | 33.3 |
| Current Machine Av. (Mill)[a] | 38.2 | -- | -- | 39.3 | 38.1 | 37.0 | 40.7 | 34.5 | 35.9 | -- | -- | 40.1 | 35.1 | 35.3 | 34.7 | 32.4 | 37.8 | 35.9 | -- | 39.2 | 34.9 | 34.3 |
| Average Difference[b] | +1.2 | -- | -- | -0.7 | -0.5 | +0.7 | +1.8 | +2.5 | -1.0 | -- | -- | +0.9 | -0.8 | -0.7 | +1.6 | -1.3 | -1.4 | +0.3 | -- | +1.6 | -0.7 | +1.0 |
| Maximum Difference[c] | +3.4 | -- | -- | -1.5 | -2.5 | +2.2 | +3.2 | +3.9 | -4.4 | -- | -- | +3.2 | +3.0 | -3.7 | +6.9 | -2.3 | -2.1 | -1.9 | -- | +3.1 | -2.2 | +2.6 |

PART II: A TABULATION FOR EACH MACHINE OF THE AVERAGE DIFFERENCE (PER CENT) BETWEEN THE CONCORA FLAT CRUSH BASED ON INSTITUTE DATA AND THAT BASED ON MILL DATA

| Average Difference, %[d] | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Current Report (Feb. and March) | +3.2 | -- | -- | -1.8 | -1.3 | +1.9 | +4.6 | +7.8 | -2.7 | -- | -- | +2.3 | -2.2 | -1.9 | +4.8 | -3.9 | -3.6 | +0.8 | -- | +4.3 | -2.0 | +3.0 |
| 99th Report (Dec. and Jan.) | +1.1 | -- | -- | -3.9 | +2.0 | 0.0 | +1.6 | +5.0 | -5.4 | +5.6 | -2.2 | -0.8 | -1.3 | -- | +1.6 | -1.5 | -0.5 | +6.0 | -- | +2.0 | 0.0 | +12.8 |
| 98th Report (Oct. and Nov.) | +1.9 | -- | +12.4 | +2.7 | -5.0 | -0.8 | +4.9 | +2.4 | -3.3 | +8.7 | +7.2 | -0.3 | +1.6 | -- | +1.4 | +3.9 | -1.5 | +4.2 | -- | +2.3 | -3.2 | +0.9 |

[a] Comparisons based on current machine average include only those rolls for which mill data were submitted.
[b] Average difference is the difference between the current machine average based on Institute test results and that based on mill test results with the Institute test results used as the reference. See Table XXV.
[c] Maximum difference is the greatest difference encountered in comparing Institute and mill test averages for individual rolls. See Table XXV.
[d] Average difference (per cent) is computed by dividing the average difference in p.s.i. (shown above in Part I of this table) by the Institute current machine average and multiplying the result by 100.

from the previous bimonthly period are also included. The data shown for the current period indicate that agreement between Institute and mill Concora data was good. It may be seen in Table XXVII that, for the current period, 5.9% of the comparisons of Institute and mill data differed by 1% or less, 47.1% of the comparisons differed by 2.5% or less, and 94.1% of the comparisons differed by 5% or less. It may be further noted that agreement for the current period at the 1 and 2.5% levels was satisfactory but somewhat poorer than the agreement for the previous period at these levels, whereas agreement for the current period at the 5 and 10% levels was better than the good agreement obtained during the previous period at these levels. The maximum difference of 7.8% noted for the current period was appreciably lower than the maximum difference of 12.8% noted for the previous period.

TABLE XXVII

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL
CONCORA FLAT CRUSH DATA

| Average Percentage Difference Between Institute and Mill Concora Flat Crush Test Results[a] | Percentage of All Machines Included Within the Indicated Range | |
|---|---|---|
| | Previous Period[b] | Current Period[c] |
| ± 1.0 | 21.1 | 5.9 |
| ± 2.5 | 63.2 | 47.1 |
| ± 5.0 | 73.7 | 94.1 |
| ± 10.0 | 94.7 | 100.0[d] |
| ± 12.8 | 100.0 | |

[a] The average obtained at the Institute was used as the reference in the calculation of the percentage differences.
[b] December, 1962, and January, 1963.
[c] February and March, 1963.
[d] Maximum percentage difference was 7.8.

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